sitemia in young white rats than strains isolated by the author from *Triatoma* collected in nature at Riverside, California. The Sonoran strain frequently produces a blood parasitemia of thirty flagellates per high-dry field, and counts as high as forty-seven have been recorded. A culture of this strain is being maintained by the Microbiological Institute, U.S. Public Health Service, Bethesda, Maryland.

The author collected two adults of *T. rubida sonoriana* (♂♀) six miles north of Hermosillo, Sonora, Mexico, on April 26, 1952. Feces examined from the female were swarming with flagellates; feces of the male were negative. Infective fecal material from the female bug was administered by intraperitoneal injection into two white rats when they were nine days of age. Blood smears of tail blood from both rats contained motile flagellates thirty-five days after inoculation.

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NOTES ON THE ECOLOGY OF BOMBUS SONORUS IN ORANGE COUNTY, CALIFORNIA AND NEW PARASITE RECORDS

(Hymenoptera: Bombidae. Diptera: Sarcophagidae, Conopidae, Phoridae)

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During the summer and fall of 1951, several populous bumblebee nests were encountered while field research was being conducted near San Juan Capistrano, Orange County, California. Five nests were studied, all underground in abandoned rodent burrows or in deep natural crevices in the soil.

T. H. Frison (1926) records a species of calliphorid fly, *Brachicoma sarcophagina* (Townsend), from *Bombus auricomus* (Robertson), *B. americanorum* (Fabricius), *B. bimaculatus* Cresson,

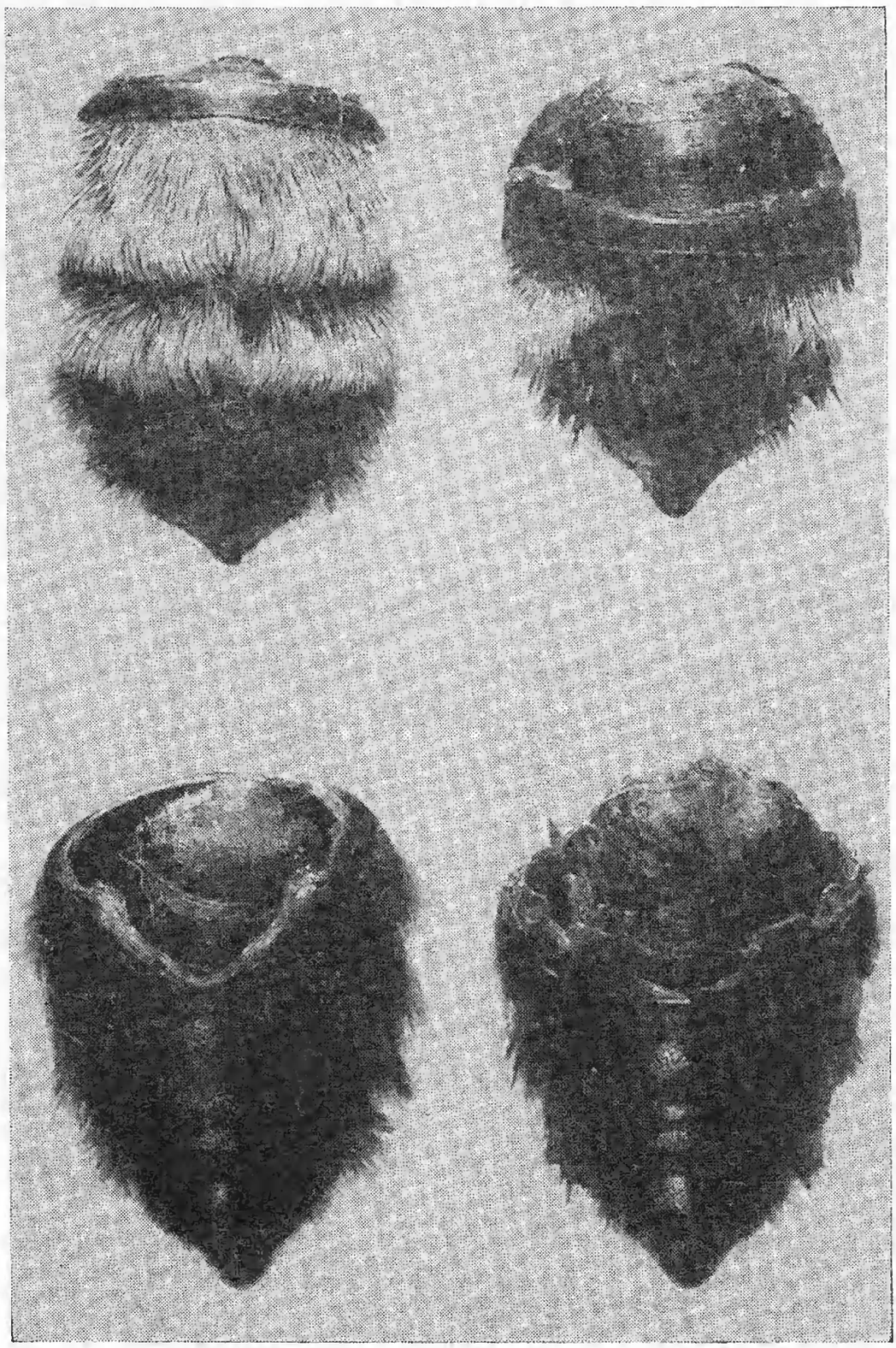

Fig. 1. Abdomens of *Bombus sonorus* Say, dorsal and ventral, to show a dipterous puparium in each.

B. vagans Smith, and *B. fervidus* (Fabricius). Davidson in California reared a species of *Brachicoma* from the larvae of *Bombus fervidus;* it was named *B. davidsoni* by Coquillett.

On September 25, 1951, a total of 116 adult bees were captured from nest No. 1. Subsequent visits were not made to this nest until November 1, at which time only a few dead and dying bees remained. Much of the comb had been eaten by larvae of the dried fruit moth, *Vitula serratilineela* Ragonot.

PARASITES

The 116 active bees collected from nest No. 1 on September 25 were placed in a cyanide jar for a short time and then stored overnight in a refrigerator at a temperature of 40° F. When removed from the refrigerator, seven dipterous maggots crawled from the bees. These maggots were *Sarcophaga (Helicobia) morionella* Aldrich; they soon pupated and all had emerged by October 26, 1951. Dead and dying bees collected on November 1 were examined for parasites. Dipterous pupae filled the abdominal cavities (fig. 1.). Of the three bees collected from nest No. 3 on November 1, one contained a large dipterous larvae in the abdominal cavity.

Parasitic Diptera reared from *Bombus sonorus* Say are:

Sarcophagidae

Sarcophaga (Helicobia) morionella Aldrich. Det. by C. W. Sabrosky.
Sarcophaga litorosa Reinhardt. Det by C. W. Sabrosky.
Sarcophaga tuberosa sarracenioides Aldrich. Det by H. R. Dodge.

Conopidae

Physocephala sp. (Wings distorted on emergence). Det. by C. W. Sabrosky.

Non-parasitic Diptera reared from nest of *Bombus sonorus Say:*

Phoridae

Megaselia sp. Det. by W. W. Wirth.
Conicera atra (Meigen). Det by W. W. Wirth.

The author is indebted to W. W. Wirth, C. W. Sabrosky and H. R. Dodge for identifying the specimens and to W. R. Thompson and H. E. Milliron for checking their files for records of Diptera parasitic on bumblebees. Representative specimens of all species mentioned have been retained by the U.S. National Museum and the Communicable Disease Center, Atlanta, Georgia.

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